

**Se Technical Sub Committee
September 16th Meeting**

**September 16, 2019
1:00p – 2:30p PST / 2:00p – 3:30p MST**

In attendance: Sheldon Reddekopp (co-chair; BC ENV), Lauren Sullivan (co-chair; MDEQ), Joe Beaman (USEPA), David DeForest (Windward Env.), Genny Hoyle (KTOI), David Janz (U SASK), Karen Jenni (USGS), Heather McMahon (KNC), Dave Naftz (USGS), Theresa Presser (USGS), Erin Sexton (CSKT), Joe Skorupa (USFWS), Jesse Sinclair (KNC), Myla Kelly (MDEQ), Michel Ryan-Aylward (BC ENV); Carla Fraser (Teck), Jason Gildea (USEPA), Karen Kesler (USEPA), Kevin Rieberger (BC ENV), David Rouse (USFWS), Ayn Schmit (USEPA)

Meeting Summary

Co-chairs opened the meeting with updates. The updated State of the Lake data compilation spreadsheets are now available on the wiki site and a link to the site had been previously circulated. The State of the Lake data compilation report is being updated by Lotic. An email will be distributed when that updated report has been received and uploaded to the wiki. The committee previously discussed having selenium speciation analysis done by Brooks lab if possible. Brooks lab recently confirmed that the suspended particulate samples had been exhausted in previous selenium analysis, so they will not be able to conduct speciation.

Karen Jenni (USGS) delivered a presentation about the mechanistic ecosystem model, using a slide deck previously shared in 2017. The presentation is available on the wiki at:

http://lakekoocanusaconsevation.pbworks.com/w/file/122331477/LK%20Se%20modeling_Overview_10-18-17.pptx.

Karen's presentation provided an overview of the ecosystem-scale selenium model which models the flow of selenium from source, through receiving waters, partitioning in the environment, uptake into food webs, bioaccumulation in the food webs and finally concentrations at endpoints of concern. The presentation outlined the steps for model validation in order to assess the accuracy of the model's predictions. After the model is validated, it can be applied to derive a range of protective water column values. The presentation highlighted key decisions that need to be made, some of which are modeling decisions while others are policy decisions informed by science. Karen identified three hypothetical example calculations to illustrate how, once certain decisions are made, the model could be applied to derive a water column target.

- Discussion of Karen's presentation elicited the following comments and questions:
 - David Janz (U SASK) noted that the best models are simple ones, and this seems a bit complicated when considering all species and all niches across all seasons.
 - Theresa Presser (USGS) noted that the model itself is quite simple after many of the decisions have been made. As previously discuss the aquatic invertebrate and zooplankton food web may be the only food webs to concentrate on. The kd determination would come from what sites you would pick. Once you have the structure and formally go through the decisions, it becomes simpler.
 - Dave Janz followed up that he is in agreement with Theresa Presser with regards to the model being simple, he reiterated the implementation portion is what may be more complicated.

- Joe Skorupa (USFWS) commented that perhaps implementation may not be that difficult because the national selenium draft criteria was based on this same approach which included implementation. He clarified that this approach had been used before.
 - USGS confirmed that the ecosystem model approach was used by the US EPA for their national water quality criteria and noted that a more recent California toxics rule created a methodology for selenium site specific criteria using this same approach.
- Co-chairs invited Karen Kesler (US EPA) to comment on the similarities in using the mechanistic model approach used for the California site specific selenium standards and what Montana is developing.
 - Karen Kesler also confirmed that the approach was used for national criteria in the U.S. She noted that the EPA is also working with California on site specific selenium standards, which generated a methodology for deriving site specific water quality criteria. A draft translation document is publicly available. It lays out a step-by-step process for California to follow in determining water quality translations at specific sites using the mechanistic and empirical model, similar to what Montana is doing. In developing that document, the EPA made various decisions which illustrate how the model works once key decisions are made. That document can be found at: https://www.epa.gov/sites/production/files/2018-12/documents/california_selenium_2040-af79_pba_20181121_508c.pdf
 - Karen Kesler noted that the challenging aspects of this modeling approach are the decision points because some decisions are a mix of both policy and science.
- Joe Skorupa followed up on earlier comment/conversation that there are two distinct issues associated with implementation: model implementation (having the data to implement the modeling approach); and criteria implementation (how to conduct monitoring to determine compliance). He noted the SeTSC's discussions at present are focused on modeling implementation.
- Moving on from Karen Jenni's presentation, Sheldon (ENV, SeTSC co-chair) commented that we will be moving forward into much of what Karen Kesler and Karen Jenni mentioned about decision making at the November meeting. Co-chairs will be laying out a process for moving through those decisions. Sheldon asked if the SeTSC members would be interested/willing to use the October SeTSC meeting as a venue for discussions/decisions on which fish species to select for modeling.
 - There was a general agreement amongst SeTSC members indicating that decisions on model parameters are best made in-person. Developing a set of options could be discussed on the phone.
- David Janz asked whether it would be feasible for a next step to use some of the recently collected data to conduct exploratory work with the model, in order to inform the question of which species to select. For example, he posited, we could start with a particular concentration of selenium; knowing food web of a particular fish and work our way up towards a concentration predicted in the tissue or egg ovaries; and compare that to what's known about relative species sensitivity from species sensitivity distribution to try to inform the questions being asked, such as what fish species to use? Also starting to think about the kd value and how it is considered/incorporated that the kd decreases as the selenium concentration increases.
 - USGS responded to indicate that the exploratory work David Janz suggested is akin to model validation

Co-chairs opened the final minutes of the call up to observers to capture questions/comments but will not be looking to members to answer at this moment. No questions/comments from observers were put forth.